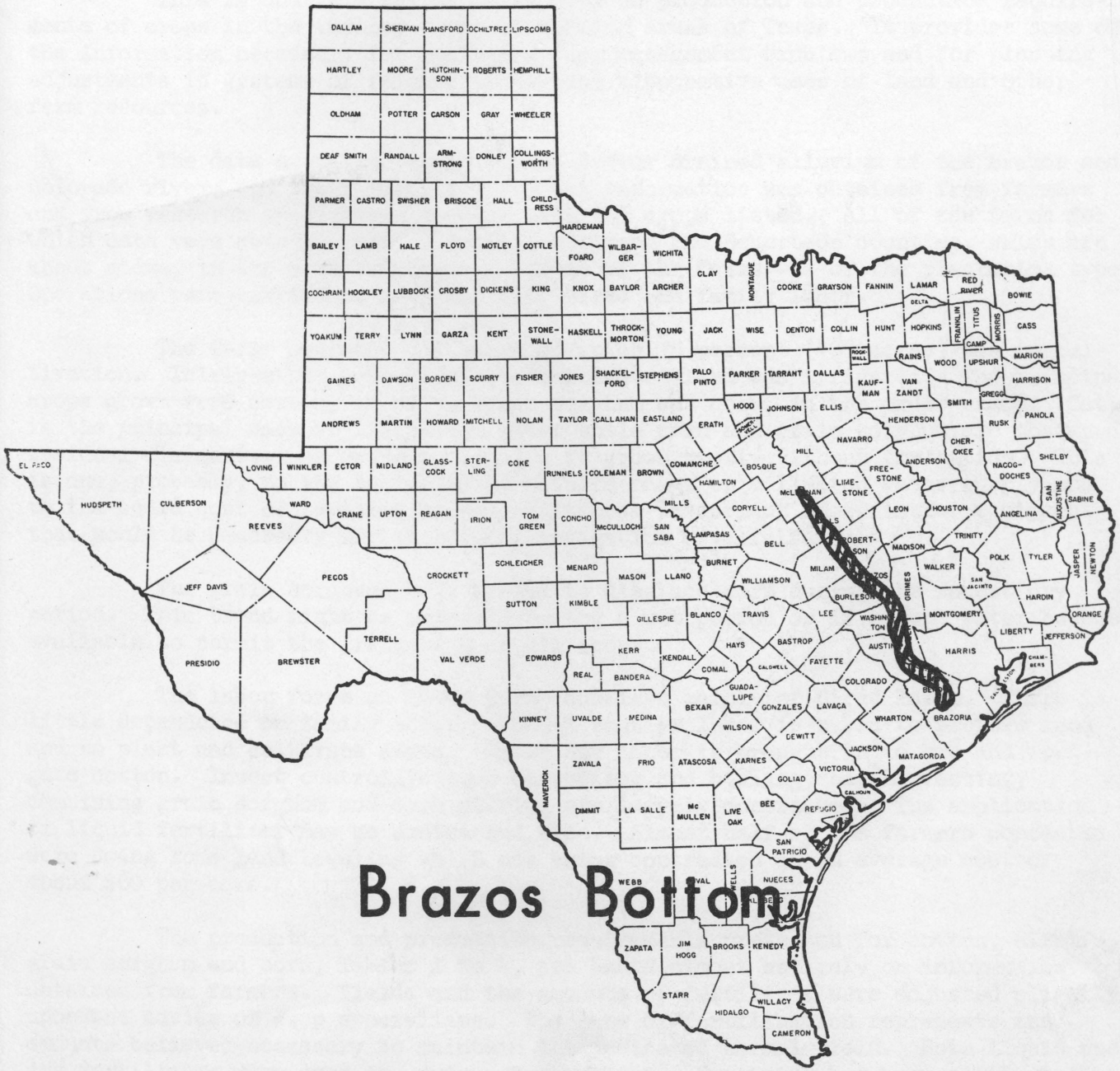
Production and Production Requirements of Crops



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PRODUCTION AND PRODUCTION REQUIREMENTS OF CROPS--BRAZOS BOTTOM

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This is one in a series of reports on production and production requirements of crops in the various types-of-farming areas of Texas. It provides some of the information necessary for analyzing farm management problems and for planning adjustments in systems of farming or testing alternative uses of land and other farm resources.

The data submitted apply to the better drained alluvium of the Brazos and Colorado rivers and their tributaries. The information was obtained from farmers and from research specialists working with the crops listed. All of the farms for which data were obtained are in Brazos, Burleson and Robertson counties, which are about midway in the area represented. None of the farms was of the plantation type. Operations were carried on entirely with hired and family labor.

The farms averaged 532 acres of which 75 percent (400 acres) was in cultivation. Thirty-eight percent of the cultivated land was irrigated. The principal crops grown were cotton, alfalfa, grain sorghum and corn, in the order named. Cotton is the principal user of irrigation water while corn and grain sorghum are the usual residual claimants. At present, alfalfa is grown mostly without irrigation. This is due, probably, to the heavy demand alfalfa makes on a limited water supply and to the added cost of leveling or the additional investment in sprinkler equipment that would be necessary for successful irrigation of alfalfa.

The grain sorghums have tended to displace corn during the recent dry period. This trend might be reversed during a wet period or if enough water becomes available to permit the irrigation of all crops.

The labor force on these farms consists mainly of hired labor. There is little dependence on family labor. Enough regular labor is hired to prepare land and to plant and cultivate crops. Extra day labor is brought in to hoe and irrigate cotton. Insect control, cotton harvesting and hauling, hay harvesting, combining grain sorghum and corn picking are largely contracted. The application of liquid fertilizer may be contracted also. Almost half of the farmers contacted were doing some land leveling which was being contracted at an average cost of about $60 per acre.

The production and production requirements presented for cotton, alfalfa, grain sorghum and corn, Tables 1 to 4, are based almost entirely on information obtained from farmers. Yields and the amounts of fertilizer were adjusted slightly upon the advice of crop specialists. The rate of fertilization represents the amounts believed necessary to maintain the indicated normal yield. Both liquid and dry fertilizers were used in various proportions. Reporting has been simplified by listing the total pounds per acre of the three common elements--nitrogen, phosphorus and potassium. Similarly, numerous insecticides were used. Presentation was simplified by listing total amounts of dust and spray and by reporting only those insecticides most commonly used.

As far as possible the data are given in physical quantities and represent the usual or normal practices and rates of performance. The actual amounts will vary slightly from year to year with seasonal conditions. The normal amounts will change slowly through time with technological change.

In items such as contract operations, 1956 cost rates are listed. These will vary with changes in the market place or with changes in price level and price relationships.

Production rates and production requirements also are included for a number of crops which have been suggested for possible inclusion in cropping systems in the Brazos Bottom in case irrigation becomes a general practice and further restrictions are placed on the cotton acreage. These crops include sesame, forage sorghum, oats pasture and Coastal Bermuda, Tables 5 to 8. Inclusion of the latter three presumes the development of intensive livestock systems of farming.

Large responses to water and fertilizer have led to a growing interest in Coastal Bermuda as a source of forage. Problems relating to the utilization, by grazing, of high-yielding irrigated Coastal Bermuda have not been solved. In setting up production rates and requirements it was assumed that the crop would be utilized as green chops.

Except for harvesting, production methods for sesame are similar to those for grain sorghum. This crop is considered a possible competitor for acreage being released from cotton production.

Because of the growing interest of large processors in the Brazos Bottom as a source of canning vegetables, production rates and requirements are included for carrots, snap beans, southern peas and tomatoes, Tables 9 to 12.

A small acreage of these crops is being contracted for harvest in 1957 with the processing to be done elsewhere. The Department of Horticulture has grown these vegetables experimentally in the area for several years with satisfactory results. The results of these tests will help determine future developments.

If substantial acreages of canning vegetables are produced in the Brazos Bottom,cabbage probably would be produced also for the fresh vegetable market. Because of this interest in cabbage, estimates of production and production requirements for this crop are included, Table 13.

Estimates of yields, rates of fertilization, insect control practices and the combination of cultural practices for all of the crops listed, which are not commonly grown in the area now, are based on information obtained from crop specialists. Rates of performance for common field operations for these crops are the same as reported by farmers for the crops usually grown, namely cotton, grain sorghum and corn.

Acknowledgment

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Table 1. Cotton production and production requirements

	Dryland			Irrigated		
Variety	D.P.L.			D.P.L.		
Normal yield, lint, pounds	400			900		
Seed per acre, pounds	50			50		
Average price of seed dollars per 100 pounds						
Bought, 15 percent	7.25			7.25		
Home grown, 85 percent	3.62			3.62		
Spray materials, gallons[1/]	3.25			6.50		
	N	P_2O_5	K_2O	N	P_2O_5	K_2O
Fertilizer, pounds	40	20	0	80	20	0
Usual planting period	March - April			March - April		
Usual harvesting period	August - November			August - November		

Labor and power inputs per acre, four-row equipment

Operation	Dryland X Over	Dryland Total hours Man	Dryland Total hours Tractor	Irrigated X Over	Irrigated Total hours Man	Irrigated Total hours Tractor
Cut stalks	1.0	.37	.37	1.0	.40	.40
Disk	2.0	.80	.80	2.0	.80	.80
Bed	3.0	1.11	1.11	3.0	1.11	1.11
Fertilize	1.0	.33	.33	1.0	.33	.33
Cultivate beds	1.0	.40	.40	1.0	.40	.40
Plant	1.25	.38	.38	1.0	.38	.38
Cultivate	7.0	1.75	1.75	8.0	2.00	2.00
Spray	5.0	.60	.60	5.0	.60	.60
Hoe	4.0	25.00		5.0	30.00	
Ditch work				3.0	.75	.75
Irrigate				3.0	9.00	
Total hours preharvest		30.74	5.74		45.77	6.77
Contract operations						
Spray, plane	5.0 at 75 cents per acre			12.0 at 75 cents per acre		
Harvest and haul						
Snap	$2.25 per 100 pounds			50 percent at $2.25 per 100 pounds		
Pick				50 percent at $2.65 per 100 pounds		

1/ Toxaphene (2) and DDT (1) at $2.25 per gallon.

Table 2. Alfalfa production and production requirements

	Dryland			Irrigated		
Variety	Southwest Common			Southwest Common		
Normal yield, tons	2.5			5.0		
Seed per acre, pounds	25			25		
Average price of seed cents per pound	30			30		
Spray materials, pints[1]	3			3		
	N	P_2O_5	K_2O	N	P_2O_5	K_2O
Fertilizer						
In seed bed, pounds	0	60	60	20	120	60
Top dress each year, pounds				0	60	0
Usual planting period	October - November			October - November		
Usual harvesting period	April - October			April - October		

Labor and power inputs per acre

	Every 3 years			Every 5 years		
		Total hours			Total hours	
Operation	X Over	Man	Tractor	X Over	Man	Tractor
Flat break	1.0	1.50	1.50	1.0	1.50	1.50
Disk	3.0	1.26	1.26	3.0	1.26	1.26
Fertilize	1.0	.25	.25	1.0	.30	.30
Level				1.0	contract	
Ditch and border				1.0	1.00	.80
Irrigate				1.0	2.50	
Planting	1.0	.33	.33	1.0	.33	.33
Culti-pack	1.0	.25	.25	1.0	.25	.25
Total to establish stand		3.59	3.59		7.14	4.44
				Annual inputs		
Irrigate				5.0	12.50	
Fertilize				1.0	.25	.25
Mowing[2]	3.0	1.50	1.50	5.0	2.50	2.50
Raking[2]	3.0	.75	.75	5.0	1.25	1.25
Baling[2]	3.0	2.25	2.25	5.0	3.75	3.75
Hauling	3.0	6.75	2.25	5.0	11.25	3.75
Total annual input		11.25	6.75		31.50	11.50

1/ Malathion at $8.09 per gallon.
2/ Three operations usually contracted at 25 cents per 60-pound bale.

Table 3. Grain sorghum production and production requirements

	Dryland			Irrigated		
Variety	Martin			Martin		
Normal yield, pounds	3,000			4,500		
Seed per acre, pounds	6			7		
Average price of seed dollars per 100 pounds	6.30			6.30		
	N	P_2O_5	K_2O	N	P_2O_5	K_2O
Fertilizer, pounds	0	0	0 Heavy	40	0	0
			Sandy	60		
Usual planting period	March			March		
Usual harvesting period	July - August			July - August		

Labor and power inputs per acre, four-row equipment

Operation	Total hours			Total hours	
	X Over	Man	Tractor	X Over	Man	Tractor
Cut stalks	1.0	.37	.37	1.0	.40	.40
Disk	1.0	.40	.40	1.0	.40	.40
Bed	2.0	.74	.74	3.0	1.11	1.11
Cultivate beds	1.0	.25	.25	1.0	.25	.25
Plant	1.0	.33	.33	1.0	.33	.33
Cultivate	3.0	.75	.75	3.0	.75	.75
Hoe	2.0	12.00		2.0	12.00	
Fertilize				1.0	.25	.25
Ditch work				1.0	.25	.25
Irrigate				1.0	3.00	
Total hours preharvest		14.84	2.84		18.74	3.74
Contract operations						
Combine and haul		$5.00 an acre			$7.00 an acre	

Table 4. Corn production and production requirements

	Dryland			Irrigated		
Variety	Hybrid 28			Hybrids 28 and 30		
Normal yield, bushels	40			85		
Seed per acre, pounds	9			9		
Value of seed cents per pound	16			16		
	N	P_2O_5	K_2O	N	P_2O_5	K_2O
Fertilizer, pounds	20	20	0	60	30	0
Usual planting period	March			March		
Usual harvesting period	August - October			August - October		

Labor and power inputs per acre, four-row equipment

Operation	X Over	Total hours Man	Total hours Tractor	X Over	Total hours Man	Total hours Tractor
Cut stalks	1.0	.37	.37	1.0	.40	.40
Flat break	1.0	1.25	1.25	1.0	1.25	1.25
Disk	2.0	.84	.84	2.0	.84	.84
Bed	1.0	.37	.37	1.0	.37	.37
Fertilize	1.0	.25	.25	1.0	.25	.25
Plant	1.25	.38	.38	1.25	.38	.38
Cultivate	3.0	.75	.75	3.0	.75	.75
Hoe	2.0	12.00		2.0	12.00	
Ditch work				2.0	.50	.50
Irrigate				2.0	6.00	
Total hours preharvest		16.21	4.21		22.74	4.74
Contract operations						
Harvest and haul		$5.00 an acre			$7.00 an acre	

Table 5. Sesame production and production requirements

	Dryland			Irrigated		
Variety, non-shattering	Rio			Rio		
Normal yield, pounds	700			1,400		
Seed per acre, pounds	1			1		
Seed cost dollars per 100 pounds	10.00			10.00		
	N	P_2O_5	K_2O	N	P_2O_5	K_2O
Fertilizer, pounds	20	20	0	40	40	0
Usual planting period	May			May		
Usual harvesting period	October			October		

Labor and power inputs per acre, four-row equipment

Operations	Dryland X Over	Dryland Total hours Man	Dryland Total hours Tractor	Irrigated X Over	Irrigated Total hours Man	Irrigated Total hours Tractor
Disk	1.0	.40	.40	1.0	.40	.40
Bed	3.0	1.11	1.11	3.0	1.11	1.11
Fertilize	1.0	.25	.25	1.0	.30	.30
Cultivate beds	1.0	.40	.40	1.0	.40	.40
Plant	1.25	.38	.38	1.25	.38	.38
Cultivate	3.0	.75	.75	3.0	.75	.75
Hoe	1.0	8.00		1.0	8.00	
Ditch work				2.0	.50	.50
Irrigate				2.0	6.00	
Total hours preharvest		11.29	3.29		17.84	3.84
Cut and windrow	1.0	.50	.50	1.0	.56	.56
Combine	1.0	.60	.60	1.0	.80	.80
Haul	1.0	.60	.60	1.0	.80	.80
Total harvesting		1.70	1.70		2.16	2.16
Total all operations		12.99	4.99		20.00	6.00

Table 6. Forage sorghum production and production requirements

	Dryland			Irrigated		
Variety	Atlas, Honey and Sart			Atlas, Honey and Sart		
Normal yield, silage, tons	12			25		
Seed per acre, pounds	6-12			6-12		
	N	P_2O_5	K_2O	N	P_2O_5	K_2O
Fertilizer, pounds	75	45	0	150	60	0
Usual planting period	April - May - June			April - May - June		
Usual harvesting period	July - August - September			July - August - September		

Labor and power inputs per acre, four-row equipment

Operation	Dryland X Over	Dryland Total hours Man	Dryland Total hours Tractor	Irrigated X Over	Irrigated Total hours Man	Irrigated Total hours Tractor
Bed	2.0	.74	.74	2.0	.74	.74
Fertilize	1.0	.33	.33	1.0	.33	.33
Plant	1.0	.33	.33	1.0	.33	.33
Cultivate and fertilize	3.0	.85	.85	3.0	.90	.90
Ditch work				3.0	.75	.75
Irrigate				3.0	9.00	
Total hours preharvest		2.25	2.25		12.05	3.05
Harvest, field cutter	1.0	1.30	1.30	1.0	2.50	2.50
Haul and store	1.0	5.10	3.90	1.0	10.00	7.50

Table 7. Oats pasture production and production requirements

	Dryland			Irrigated		
Variety	Mustang			Mustang		
Normal yield animal unit grazing days	90			150		
Seed per acre, pounds	75			75		
	N	P_2O_5	K_2O	N	P_2O_5	K_2O
Fertilizer, pounds	75	30	0	90	45	0
Planting period	September - October			September - October		
Harvesting period	January - March			November - March		

Labor and power inputs per acre, four-row equipment

Operation	X Over	Total hours Man	Total hours Tractor	X Over	Total hours Man	Total hours Tractor
Bed	2.0	.74	.74	2.0	.74	.74
Disk	1.0	.40	.40	1.0	.40	.40
Harrow	1.0	.20	.20	1.0	.20	.20
Drill and fertilize	1.0	.40	.40	1.0	.40	.40
Top dress	1.0	.33	.33	1.0	.33	.33
Irrigate[1/]				2.0	2.00	
Total hours preharvest		2.07	2.07		4.07	2.07
Harvest	Graze			Graze		

1/ Sprinkler system.

Table 8. Coastal Bermuda production and production requirements

	Dryland			Irrigated		
Variety	Coastal			Coastal		
Normal yield tons green chops	20			60		
Sprigs per acre, bushel	5			5		
Average price of sprigs dollars per bushel	1.25			1.25		
	N	P_2O_5	K_2O	N	P_2O_5	K_2O
Fertilizer, pounds	135	45	0	420	90	0
Usual planting period	April			April		
Usual harvesting period	May - October			May - October		

Labor and power inputs per acre

Operation	Dryland X Over	Dryland Total hours Man	Dryland Total hours Tractor	Irrigated X Over	Irrigated Total hours Man	Irrigated Total hours Tractor
Flat break	1.0	1.25	1.25	1.0	1.25	1.25
Disk	1.0	.40	.40	1.0	.40	.40
Sprig[1]	1.0	contract		1.0	contract	
Irrigate[2]				1.0	1.00	
Total to establish		1.65	1.65		2.65	1.65
Irrigate[2]				5.0	5.00	
Fertilize	1.0	.30	.30	1.0	.33	.33
Top dress	2.0	.50	.50	5.0	1.25	1.25
Harvest	2.0	7.50	5.00	5.0	22.50	15.00
Total annual inputs		8.30	5.80		29.08	16.58

1/ Custom rate -- $10.00 per acre.
2/ Sprinkler system.

Table 9. Carrots production and production requirements

	Irrigated		
Normal yield, tons[1/]	10		
Seed per acre, pounds	3		
Average price of seed dollars per pound	2.50		
Spray material oil for weeds, gallons	50		
Average price of oil cents per gallon	10		
	N	P_2O_5	K_2O
Fertilizer, pounds	40	80	80
Usual planting period			
Spring crop	February 15		
Fall crop	August 20- September 20		
Usual harvesting period			
Spring crop	April 15-30		
Fall crop	November 1 - January 15		

Labor and power inputs per acre, four-row equipment

Operation	X Over	Total hours Man	Total hours Tractor
Flat break	1.0	1.25	1.25
Disk	1.0	.40	.40
Bed	1.0	.37	.37
Fertilize	1.0	.33	.33
Drag beds	1.0	.30	.30
Plant	1.0	.50	.50
Oiling	1.0	.40	.40
Cultivate	3.0	1.05	1.05
Hoe	3.0	30.00	
Ditch work	3.0	.75	.75
Irrigate	3.0	9.00	
Total hours preharvest		44.35	5.35
Harvest and haul	1.0	40.00	1.00

1/ 1957 contract price for carrots for canning is $20.00 per ton.

Table 10. Snap beans production and production requirements

	Irrigated		
Normal yield, pounds[1/]	10,000		
Seed per acre, pounds	30		
Average price of seed dollars per 100 pounds	10.00		
	N	P_2O_5	K_2O
Fertilizer, pounds	20	60	20
Usual planting period			
Spring crop	March 20 - April 10		
Fall crop	September 1		
Usual harvesting period			
Spring crop	May 1 - June 10		
Fall crop	October 20 - November 15		

Labor and power inputs per acre, four-row equipment

Operation	X Over	Total hours Man	Total hours Tractor
Flat break	1.0	1.25	1.25
Disk	1.0	.40	.40
Bed	1.0	.37	.37
Apply fertilizer	1.0	.25	.25
Drag beds	1.0	.25	.25
Plant	1.0	.35	.35
Cultivate	3.0	1.20	1.20
Hoe	2.0	15.00	
Ditch work	2.0	.50	.50
Irrigate	2.0	6.00	
Total hours preharvest		25.57	4.57
Harvest[2/]	3.0	contract	
Haul to market	3.0	6.00	6.00

1/ 1957 contract price for snap beans for canning is $85.00 per ton.
2/ Contracted at 1.5 cents per pound.

Table 11. Southern peas production and production requirements

	Irrigated		
Normal yield pounds green pods[1]	5,000		
Seed per acre, pounds	15		
Average price of seed dollars per 100 pounds	20.00		
	N	P_2O_5	K_2O
Fertilizer, pounds	40	80	20
Usual planting period			
Spring Crop	March 25 - April 20		
Fall crop	August 10		
Usual harvesting period			
Spring crop	June 1 - August 15		
Fall crop	October 1 - October 20		

Labor and power inputs per acre, four-row equipment

Operation	X Over	Total hours Man	Total hours Tractor
Flat break	1.0	1.25	1.25
Disk	1.0	.40	.40
Bed	1.0	.37	.37
Apply fertilizer	1.0	.25	.25
Drag beds	1.0	.25	.25
Plant	1.0	.35	.35
Cultivate	2.0	.80	.80
Hoe	2.0	15.00	
Ditch work	2.0	.50	.50
Irrigate	2.0	6.00	
Total hours preharvest		25.17	4.17
Harvest[2]	2.0	contract	
Haul to market	2.0	4.00	4.00

1/ 1957 contract price for Southern peas for canning is $65.00 per ton.
2/ Contracted at 1.5 cents per pound.

Table 12. Tomato production and production requirements

	Irrigated		
Normal yield, pounds[1/]	10,000		
Plants per acre	4,000		
Average price of plants dollars per 1,000	3.00		
Insecticides, dust, pounds[2/]	60		
	N	P_2O_5	K_2O
Fertilizer, pounds	80	80	40
Usual planting period	March 25		
Usual harvesting period	May 25 - July 30		

Labor and power inputs per acre, four-row equipment

Operation	X Over	Total hours Man	Total hours Tractor
Flat break	1.0	1.25	1.25
Disk	1.0	.40	.40
Bed	1.0	.37	.37
Fertilize	1.0	.33	.33
Drag beds	1.0	.25	.25
Set plants	1.0	5.00	1.00
Cultivate sides	2.0	.80	.80
Cultivate middles	1.0	.80	.80
Side dress	1.0	.25	.25
Dust	3.0	.75	.75
Hoe	2.0	15.00	
Ditch work	2.0	.50	.50
Irrigate	2.0	6.00	
Total hours preharvest		31.70	6.70
Pick	4.0	40.00	
Haul to market	4.0	7.50	7.50

1/ 1957 contract price for tomatoes for canning is $30.00 per ton.
2/ DDT (10) and sulfur (40) at $7.00 per 100 pounds.

Table 13. Cabbage production and production requirements

	Irrigated		
Normal yield, pounds[1]	30,000		
Plants per acre	12,000		
Average price plants dollars per 1,000	2.25		
Insecticides, dusts, pounds[2]	50		
	N	P_2O_5	K_2O
Fertilizer, pounds	80	80	40
Planting period			
Spring crop	March 1		
Fall crop	August 1		
Harvesting period			
Spring crop	June 1-30		
Fall crop	November 10-30		

Labor and power inputs per acre, four-row equipment

Operation	X Over	Total hours Man	Total hours Tractor
Flat break	1.0	1.25	1.25
Disk	1.0	.40	.40
Bed	1.0	.37	.37
Apply fertilizer	1.0	.33	.33
Drag beds	1.0	.25	.25
Set plants	1.0	6.25	1.25
Cultivate	3.0	1.05	1.05
Dusting	3.0	1.20	1.20
Ditch work	3.0	.75	.75
Irrigate	3.0	9.00	
Hoe	2.0	15.00	
Side dress, second cultivation	1.0		
Total hours preharvest		35.85	6.85
Harvest and load[3]	3.0	45.00	

1/ Estimated full yield of marketable cabbage; no allowance for market failure; 6-year state average marketed yield 10,800 pounds.
2/ Toxaphene and Parathion at $10.00 per 100 pounds.
3/ Sold on truck in field.